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Sokolov et al.

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(54) **CELLULAR TELEPHONY SEARCHER**

5,978,412 \* 11/1999 Tukai ..... 375/130

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\* cited by examiner

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(57) **ABSTRACT**

A searcher for a mobile station of a cellular telephony network. Pilot signal from nearby base stations are correlated with a pseudonoise sequence inside a search window, using a bank of correlators. Each correlator is assigned a different delay, from among a sequence of delays in the window. At each delay, correlation is performed initially for a first dwell time. If the resulting correlation value exceeds a threshold, the correlation is continued for a second dwell time. Otherwise, the correlator is set to the next delay in the sequence. Only the outputs of second dwell correlations are used to identify the nearest base station. Some correlators may perform first dwell correlations at new delays in the window at the same time that other correlators are still performing second dwell correlations at old delays in the window.

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(52) U.S. Cl. .... 375/150; 375/144

(58) Field of Search ..... 375/150, 144, 375/142, 148, 343, 347; 370/342; 455/509

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

5,216,693 \* 6/1993 Nakamura ..... 375/130  
5,396,515 \* 3/1995 Dixon et al. .... 375/150  
5,809,064 \* 9/1998 Fenton et al. .... 375/150

**23 Claims, 3 Drawing Sheets**

